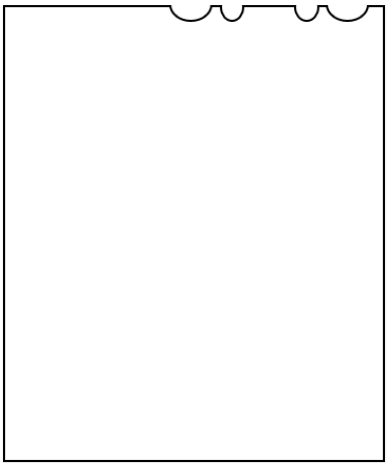
TECHNICAL INFORMATION

PANF PLUS

ISO 50/18° BLACK AND WHITE PROFESSIONAL FILM FOR HIGH PRINT QUALITY AND FLEXIBILITY IN USE

ILFORD PAN F Plus is an extremely fine grain black and white film. It has outstanding resolution, sharpness and edge contrast. These characteristics make it the natural choice where fine detail and lack of grain are more important than film speed. Mural size enlargements from PAN F Plus negatives show an outstanding range of tone and detail when the film is carefully exposed and processed.

PAN F Plus is compatible with all major processing systems, including those which give the standard short fixing and washing times and is available in the following formats:



- **35mm film.** Coated on 0.125mm/5-mil acetate base and is available in 135-36 exposure DX coded cassettes, or in bulk lengths of 30.5 metres (100ft).
- **120 Roll film.** Coated on 0.110mm/4-mil clear acetate base with an anti-halation backing which clears during development. It is available in120 lengths and is edge numbered 1 to 19.
- **Large format sheet film.** Coated on 0.180mm/7-mil polyester base with an anti-halation backing which clears during development. The emulsion faces the user when sheet film is held in the position shown.

EXPOSURE RATING

PAN F Plus has a speed rating of ISO 50/18° (50ASA, 18DIN, EI 50/18°) to daylight. The ISO speed rating was measured using ILFORD ID-11 developer at 20°C/68°F with intermittent agitation in a spiral tank.

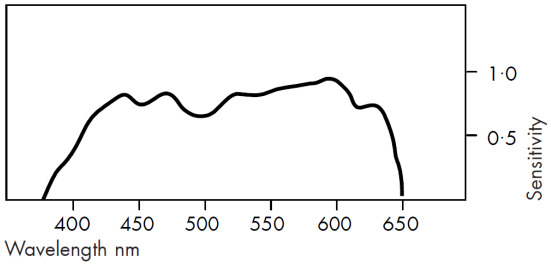
Best results are obtained at EI 50/18°, but good image quality will also be obtained when PAN F Plus is exposed at EI 25/15°.

It should be noted that the exposure index (EI) range recommended for PAN F Plus is based on a practical evaluation of film speed and is not based on foot speed, as is the ISO standard.

Important Note: Once exposed, process PAN F Plus as soon as practical – we recommend within 3 months.

SPECTRAL SENSITIVITY

Wedge spectrogram to tungsten light (2850K)



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FILTER FACTORS

PAN F Plus film may be used with all types of filters (eg colour, polarising and neutral density filters) in the usual way. Follow the instructions given by the filter manufacturer.
The exposure increase in daylight may vary with the angle of the sun and the time of day. In the late afternoon or the winter months, when daylight contains more red light, green and blue filters may need slightly more exposure than usual.
Cameras with through-the-lens metering will usually adjust the exposure automatically when using filters. With some automatic exposure cameras, the correction given for deep red and orange filters can produce negatives under exposed by as much as 1½ stops.

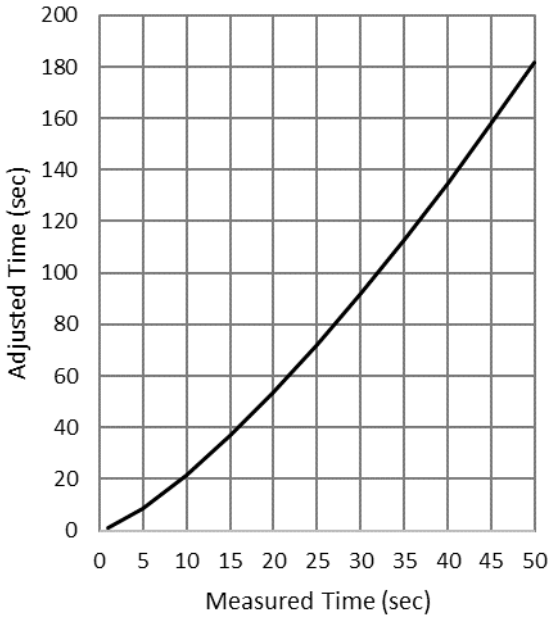
MAKING LONG EXPOSURES

For exposures between ½ and 1/10 000 second, no adjustments are needed for reciprocity law failure.

When exposures longer than ½ second are given, PAN F Plus, along with other films, needs to be given more exposure than indicated by a meter. Use the graph to calculate the increased exposure time which should be given once the measured time is known.

The graph is based on the formula $Ta = Tm^{1.33}$

Ta = Adjusted Time
Tm = Measured Time



CHOOSING THE BEST ILFORD DEVELOPER FOR THE JOB

Manual processing Spiral tank, dish/tray, deep tank
Including rotary processors

	Liquid	Powder
Best overall image quality	ILFOTEC DD-X	ID-11 (stock)
Finest grain	ILFOTEC DD-X	PERCEPTOL (stock)
Maximum sharpness	ILFOTEC DD-X	ID-11 (1+3)
One-shot convenience	ILFOSOL 3 ILFOTEC DD-X	ID-11 (1+1) MICROPHEN (1+1)
Economy	ILFOTEC LC29 (1+29)	ID-11 (1+3) MICROPHEN (1+3)
Rapid processing	ILFOTEC HC (1+31)	–
Replenishable	ILFOTEC HC	ID-11

Machine Processing

Dip and dunk	ILFOTEC DD	Best overall image quality (liquid) and long tank life
	ID-11	Best overall image quality (powder) and long tank life
	ILFOTEC HC	Flexible process time, range of dilutions and economy
Short leader	ILFOTEC RT RAPID	Rapid processing, best overall image quality and long tank life
	ILFOTEC HC	Range of dilutions, flexibility and economy
Roller transport	ILFOTEC RT RAPID	Rapid processing

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DEVELOPMENT TIMES

The table below gives development times for both manual and machine processing PAN F Plus. These times will produce negatives of average contrast suitable for printing in all enlargers The development times are intended as a guide and may be altered if a different result is needed.

For manual processing in spiral tanks and deep tanks, the development times are based on intermittent agitation. Where continuous agitation is used for manual processing (as in a dish/tray or with some types of developing tank), reduce these times by up to 15%. For use in rotary processors without a pre-rinse, reduce the spiral tank development times by up to15%. A pre-rinse is not recommended as it can lead to uneven processing.

		35mm and Roll Film		
ILFORD developer	Dilution	Meter setting EI 25/15	EI 50/18	EI 64/19
Spiral tank, deep tank, dip and dunk machines (min/20°C/68°F)				
ILFOTEC DD-X	1+4	7	8	–
ILFOSOL 3	1+9	–	–	–
	1+14	–	4½	–
ILFOTEC HC	1+31	–	4	–
ILFOTEC LC29	1+19	–	4	–
	1+29	–	5½	–
ID-11	stock	4½	6½	–
	1+1	6	8½	–
	1+3	12½	15	–
MICROPHEN	stock	–	4½	6
	1+1	–	6	9
	1+3	–	11	14½
PERCEPTOL	stock	9	14	–
	1+1	10½	15	–
	1+3	15	17	–
Non-ILFORD Developers				
Acufine	stock	–	3½	–
Rodinal	1+25	–	6	–
	1+50	–	11	–
Kodak D-76	stock	4½	6½	–
	1+1	6	8½	–
	1+3	12½	15	–
Kodak HC-110	B	–	4	–
Kodak T-Max	1+4	–	4	–
Tetenal Ultrafin	1+10	–	4	–
	1+20	–	8	–
Tetenal Ultrafin Plus	1+4	–	5	–
Kodak Xtol	stock	5½	6¾	–
Dip and dunk machines (min/24°C/75°F)				
ILFOTEC DD	1+4	4½	5½	–
Kodak T-Max RS	stock	–	3	–
Kodak Xtol	stock	4½	6	–
ILFOLAB FP40, roller transport and short leader machines (sec)				
ILFOTEC RT RAPID	1+1+2/26°C/79°F	–	40	–
	1+1+5/26°C/79°F	45	50	–
ILFOTEC HC	1+11/24°C/75°F	50	65	–

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PROCESSING

Development Times

If PAN F Plus has been inadvertently exposed at settings below EI 25/15 or above EI 64/19, the following guide will ensure usable negatives are obtained. Obviously, the quality of negatives processed in this way will not be so high as conventionally processed ones.

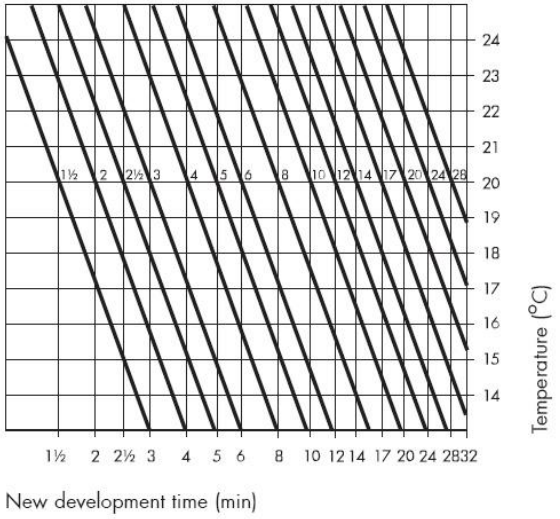
Manual Processing (min @ 20°C/68°F) – accidental exposure only

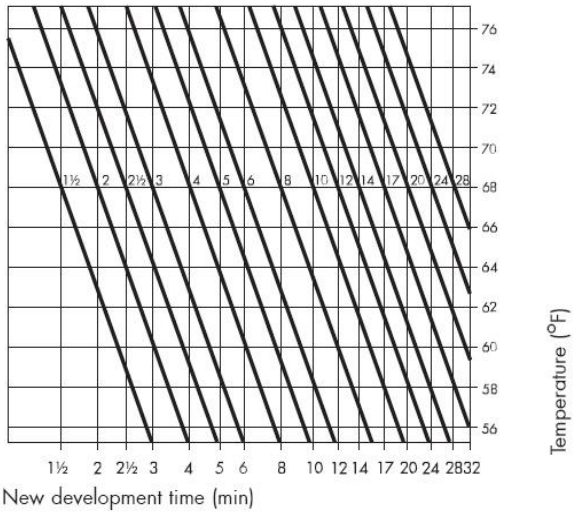
Ilford Developer	Dilution	Meter Setting		
		EI 12/12 and below	EI 100/21	EI 200/24 and above
Microphen	Stock	-	8	12
ID-11	Stock	4	-	-

Note Development times may need adjusting to suit individual processing systems and working practices. If an established system is producing development times until the desired contrast level is obtained. Development times in other manufacturers' developers are included for your convenience and are only a general guide. Other manufacturers can and do change their product specifications from time to time, and the development times may change as a result.

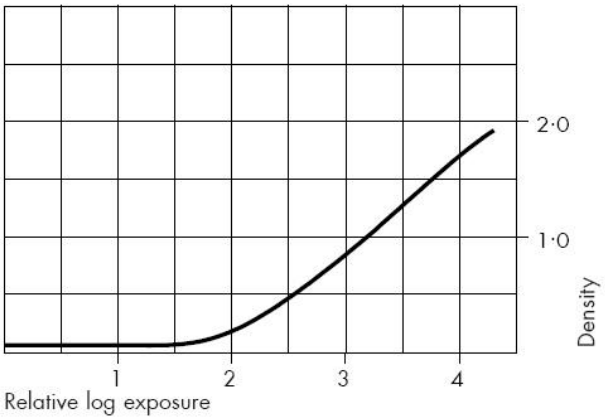
Processing at Different Temperatures

PAN F Plus film can be processed over a range of temperatures. Development times at temperatures other than 20°C/68°F may be calculated from the chart below. For example, if 4 minutes at 20°C/68°F is recommended, the time at 23°C/73°F will be 3 minutes and the time at 16°C/61°F will be 6 minutes.





CHARACTERISTIC CURVE



PAN F Plus roll film developed in ILFORD ILFOTEC HC (1+31) for 4 minutes at 20°C/68°F with intermittent agitation. This curve is also representative of the 35mm film format.

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PROCESSING

PAN F Plus can be processed in all types of processing equipment including spiral tanks, rotary processors, dishes/trays, deep tanks and automatic processors. Standard capacity figures and replenishment rates can be maintained. PAN F Plus is very robust in processing and will tolerate less than ideal processing conditions. Also, it will not contaminate the processing chemicals.

Safelight recommendations

Handle PAN F Plus film in total darkness.

Agitation

Intermittent agitation is recommended for use in spiral tanks and deep tanks. With spiral tanks, invert the tank four times during the first 10 seconds, then invert the tank four times again during the first 10 seconds of each further minute. Otherwise, follow the recommendations given by the processing equipment manufacturer.

Stop, fix, wash and rinse

For best results it is recommended that all process solutions are kept at the same temperature or at least within 5°C (9°F) of the developer temperature.

Stop Bath

After development the film can be rinsed in water, but we recommend that an acid stop bath is used such as ILFORD ILFOSTOP. ILFOSTOP is also recommended for all machine processing applications. When tanks or dishes (trays) of process solutions are in use a stop bath immediately stops development and reduces carry over of excess developer into the fixer bath. This helps to maintain the activity and prolong the life of the fixer solution.

ILFORD ILFOSTOP	
Dilution	1+19
Temperature Range	18–24°C (64–75°F)
Time (sec) at 20°C (68°F)	10
Capacity (films per litre, unreplenished)	15x (135-36)

The process time given is the minimum required, if necessary, a longer time may be used and should not cause any process problems provided it is not excessive. The recommended fixers are ILFORD RAPID FIXER and ILFORD HYPAM, both are non-hardening fixers.

Fix

The recommended fixers are ILFORD RAPID FIXER or ILFORD HYPAM FIXER.

Wash

Wash the films in running water for 5–10 minutes at a temperature within 5°C (9°F) of the process temperature. Or see note below for greater economy when using spiral tanks.

ILFORD RAPID OR HYPAM FIXERS	
Dilution	1+4
Temperature Range	18–24°C (64–75°F)
Time (mins) at 20°C (68°F)	2-5
Capacity (films per litre, unreplenished)	24x (135-36)

Note: For spiral tank use, the following method of washing is recommended. This method of washing is faster, uses less water yet still gives negatives suitable for long term storage.
After fixing, fill the spiral tank with water at the same temperature, +/– 5°C (9°F), as the processing solutions and invert it five times. Drain the water away and refill. Invert the tank ten times. Once more drain the water away and refill. Finally, invert the tank twenty times and drain the water away.

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Rinse
For a final rinse use ILFORD ILFOTOL wetting agent added to water, it helps the film to dry rapidly and evenly. Start by using 5ml per litre of rinse water (1+200), however the amount of ILFOTOL used may need some adjustment depending on the local water quality and drying method. Too little or too much wetting agent can lead to uneven drying. Remove excess rinse solution from the film before drying.

Drying
To avoid drying marks, use a clean squeegee or chamois cloth to wipe PAN F Plus film before hanging it to dry. Dry PAN F Plus at 30–40°C/86-104°F in a drying cabinet or at room temperature in a clean dust-free area.

STORAGE

Store PAN F Plus in a cool (10–20°C/50-68°F), dry place in its original packaging.

Exposed film
Once exposed, process PAN F Plus as soon as practical – ideally within 3 months.
Exposed films should always be stored in cool, dry conditions - as recommended above.

Negatives
Store processed negatives in a cool (10–20°C/50-68°F), dry place, in the dark. Suitable storage sleeves include those made of cellulose triacetate, Mylar, paper (pH6.5–7.5) or inert polyester.

A wide range of information sheets are available which describe and give guidance on using ILFORD PHOTO products. Some product information sheets might not be available in your country.

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